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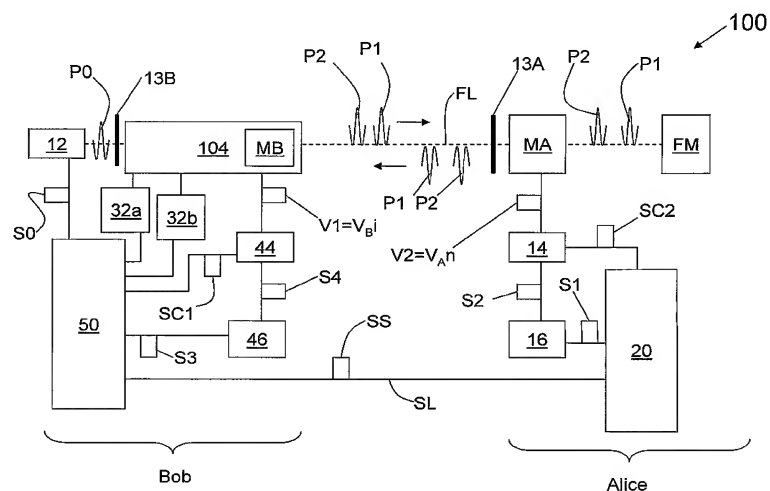
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(54) Title: MODULATOR TIMING FOR QUANTUM KEY DISTRIBUTION



(57) **Abstract:** Methods for establishing modulator timing for a QKD system (100) having QKD stations (Alice, Bob) with respective modulators (MA, MB) are disclosed. The timing method includes exchanging non-quantum signals (P1, P2) between the two QKD stations and performing respective coarse timing adjustments by scanning the modulator timing domain with relatively coarse timing intervals ( $\Delta T1C$ ,  $\Delta T2C$ ) and wide modulator voltage signal (W1C, W2C). Coarse timings (T1C, T2C) are established by observing a change in detector counts between single-photon detectors (32a, 32b) when modulation occurs in exchanged non-quantum signals. The method also includes performing a fine timing adjustment by scanning the modulator timing domain with respective fine timing intervals ( $\Delta T1R$ ,  $\Delta T2R$ ) and respective relatively narrow modulator voltage signals (W1R, W2R), and again observing a change in detector counts for exchanged non-quantum signals. This operation is repeated until desired final modulator timings (T1F, T2F) and desired final activation signal widths (W1F, W2F) are obtained for the two modulators.

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